



**Appendix D. Detailed spatial analysis of final propyzamide action area and overlap of action area with CRLF core areas and critical habitat.**

**D.1. Currently registered uses of propyzamide**

Propyzamide is nationally registered for use on blueberries, alfalfa, clover, birdsfoot trefoil, crown vetch, sainfoin, lettuce, endive, escarole, radicchio, apples, apricots, cherries, nectarines, peaches, pears, plums, prunes, grapes, sod, non-residential turf, fallow land, Christmas trees, and ornamentals without restriction to the region of application (EPA Reg. No. 62719-397, 70506-78). Propyzamide is also registered for the following uses within the specified States: globe artichokes in California, leaf lettuce in California and Arizona, cane berries and rhubarb in Oregon and Washington, and winter peas and conservation reserves in Idaho, Oregon, and Washington. There are no indoor uses of propyzamide. Because cane berries, rhubarb, winter peas, and conservation reserves are not labeled for use in California, use on these crops/areas is not evaluated in this assessment. The remaining crops are evaluated as part of exposure analysis for the CRLF.

**D.2. Determination of area where propyzamide is potentially directly applied (initial area of concern)**

After determination of which uses will be assessed, an evaluation of the potential “footprint” of the use pattern is determined. This “footprint” represents the initial area of concern and is typically based on available land cover data. Local land cover data available for the state of California were analyzed to refine the understanding of potential propyzamide use. The initial area of concern is defined as all land cover types that represent the labeled uses described above. The initial area of concern is represented by 1) orchard and vineyard landcovers; 2) agricultural areas; 3) pastures and 5) areas of turf.

Base mapping layers for determining the initial area of concern were obtained from the National Land-cover Dataset (NLCD 2001) for the majority of land use types and the California GAP data (6/98) for the orchards and vineyard uses. The NLCD is a recently released national land use dataset and the GAP is from the Biogeography Lab from UCLA-Santa Barbara. These raster files were converted to vector and used in the analysis. **Table D.1** shows the land-cover sources used.

<b>Layer name</b>	<b>Base source</b>	<b>Description</b>	<b>non-NASS</b>
Cultivated Crops	NLCD	Grid code 82: Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.	No
Developed, High Intensity	NLCD	Grid code 24: Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover.	Yes
Developed,	NLCD	Grid code 22: Includes areas with a mixture of constructed materials and vegetation.	Yes

**Table D.1. Land cover data sources.**

Layer name	Base source	Description	non-NASS
Low Intensity		Impervious surfaces account for 20-49 percent of total cover. These areas most commonly include single-family housing units.	
Developed, Medium Intensity	NLCD	Grid code 23: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79 percent of the total cover. These areas most commonly include single-family housing units.	Yes
Developed, Open Space	NLCD	Grid code 21: Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.	Yes
Forest	NLCD	Grid codes 41,42,43: Deciduous, evergreen and mixed. Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover.	Yes
Open Water	NLCD	Grid code 11: All areas of open water, generally with less than 25% cover of vegetation or soil.	Yes
Orchards and vineyards	CA GAP	Grid codes 11210, 11211 and 11212. This is the only CA GAP reference.	No
Pasture/Hay	NLCD	Grid codes 81: Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.	No
Wetlands	NLCD	Grid codes 90, 95: Woody wetlands and emergent herbaceous.	Yes

**Table D.2** lists the uses currently registered in California and the GIS land covers under which they fall. These uses are the basis for determining the initial action area for areas where propyzamide can be directly applied.

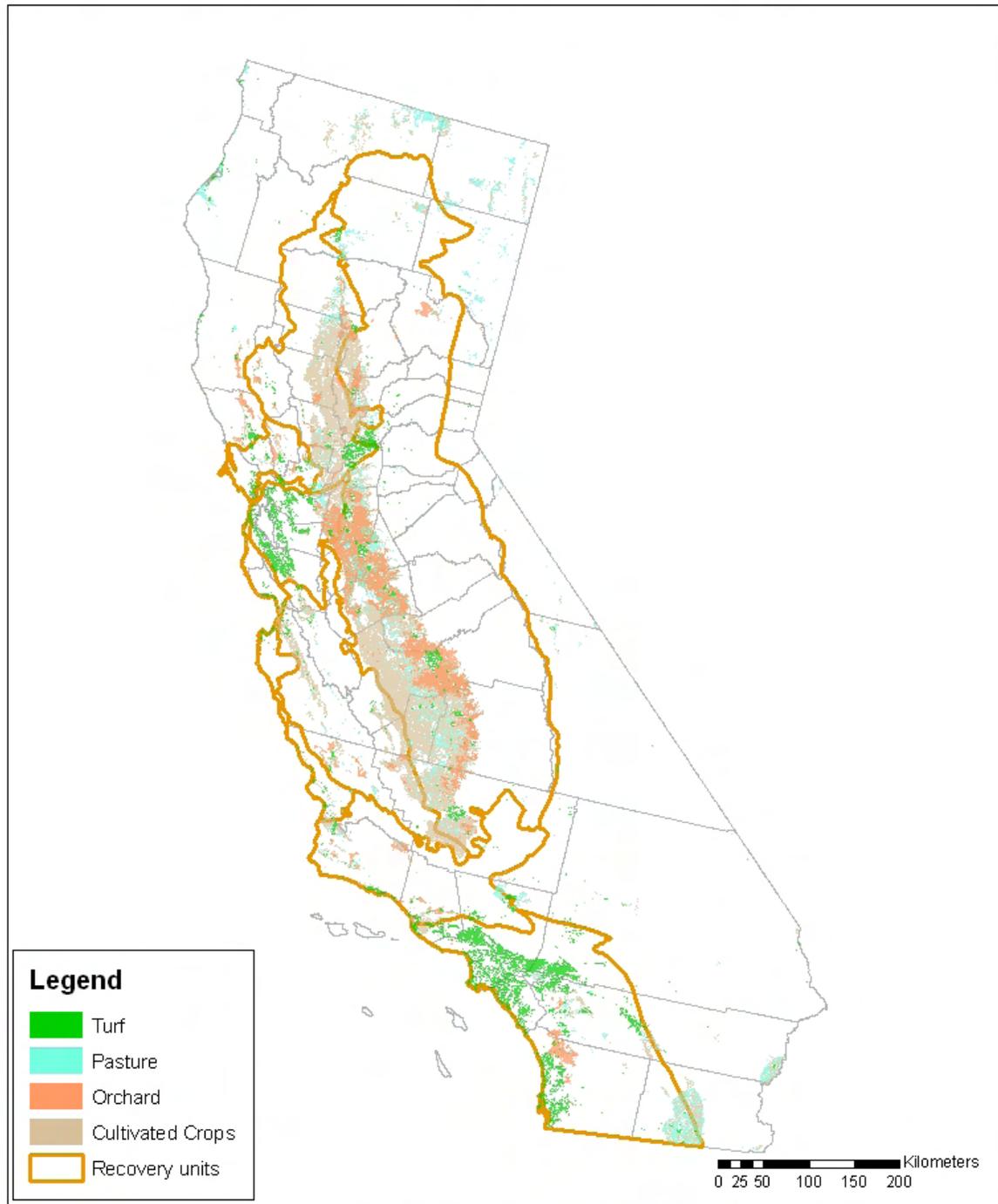
<b>Table D.2. Propyzamide uses and their respective GIS land covers used to depict the initial propyzamide action area for this assessment.</b>	
GIS Land Cover	Uses
Orchards/vineyards	Stone fruit, pome fruit, grapes, wine grapes
Cultivated Crops	Alfalfa and related crops, artichokes, blueberries, lettuce and leafy greens, ornamentals
Pasture	Fallow land
Turf	Turf, grass for seed

U.S. Department of Agriculture’s National Agriculture Statistics Service (NASS) census dataset, 2002 was used to determine whether a crop was grown in a particular county. This census dataset provides survey information over five years on agricultural practices and is used mainly for cultivated or agriculture crops. Chemical labeled uses were matched to NASS uses; an agriculture use match would result in a mapped area for one or more counties. For uses that are not agricultural, the use is assumed to occur in every county where that particular land-cover occurs within California (*i.e.* a ‘forestry’ labeled use is assumed to potentially occur in all California counties where NLCD indicates there is forest land-cover).

In counties where a use has been identified, the use is associated with the appropriate land cover data set (**Table D.2**). It is assumed that this use is potentially grown in the area where the land cover has been identified. For example, almonds are grown in Kern County. According to CA GAP data, there are orchards or vineyards within Kern County. Therefore, it is assumed that almonds, which are grown in orchards, can be grown on any of the land specified by the CA GAP data as orchards or vineyards. This process is carried out for almonds in every county in California.

The 'Initial Area of Concern' represents the use type and its occurrence in the NASS or NLCD datasets. These are the areas where the pesticide has potential to be applied, including the 4 land cover types relevant to propyzamide (agricultural, orchard/vineyard, pasture, and turf). This area is depicted in **Figure D.1**.

## Propyzamide - Initial Area of Concern



Compiled from California County boundaries (ESRI, 2002),  
USDA National Agriculture Statistical Service (NASS, 2002)  
Gap Analysis Program Orchard/Vineyard Landcover (GAP)  
National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
of Pesticides Programs, Environmental Fate and Effects Division.  
Projection: Albers Equal Area Conic USGS, North American  
Datum of 1983 (NAD 1983).

Produced 11/2/2007

**Figure D.1. Initial action area for uses of propyzamide.**

### **D.3. Determination of area indirectly affected by propyzamide use**

Since this screening level risk assessment defines taxa that are predicted to be exposed through runoff and drift to propyzamide at concentrations above the Agency's Levels of Concern (LOC), there is need to expand the action area to include areas that are affected indirectly by this federal action. Two methods are employed to define the areas indirectly affected by the federal action, and thus the total action area. These are the down stream dilution assessment for determining the extent of the affected lotic aquatic habitats (flowing) and the spray drift assessment for determining the extent of the affected terrestrial habitats. In order to define the final action areas relevant to uses of propyzamide, it is necessary to combine areas directly affected, as well as aquatic and terrestrial habitats indirectly affected by the federal action. It is assumed that lentic aquatic habitats (*e.g.*, ponds, pools, marshes) overlapping with the terrestrial areas are also indirectly affected by the federal action.

#### *Lotic aquatic action area*

The aquatic analysis uses a downstream dilution model to determine the downstream extent of exposure in streams and rivers. The downstream component, combined with the initial area of concern, define the aquatic action area. The downstream extent includes the area where the EEC could potentially be above levels that would exceed the most sensitive LOC. The model calculates two values, the dilution factor (DF) and the threshold Percent Cropped Area (PCA). The dilution factor (DF) is the maximum RQ/LOC, and the threshold PCA is the inverse value represented as a percent.

Levels of concern were not exceeded in ecological water bodies from any uses of propyzamide. Therefore, downstream dilution analysis was unnecessary for any water body outside the initial area of concern.

#### *Terrestrial and lentic aquatic action area*

When considering the terrestrial habitats of the CRLF, spray drift from use sites onto non-target areas could potentially result in exposures of the CRLF, its prey and its habitat to propyzamide. Therefore, it is necessary to estimate the distance from the application site where spray drift exposures do not result in LOC exceedances for organisms within the terrestrial habitat. To account for this, first, the propyzamide application rate that does not result in an LOC exceedance is calculated for each terrestrial taxa of concern. The Gaussian extension of AGDISP is then used to determine the distance required to reach EECs not exceeding any LOCs. These values are defined for each use in **Table D.3**.

**Table D.3. Spray drift buffer distances used to determine the extent of terrestrial action area for uses of propyzamide.**

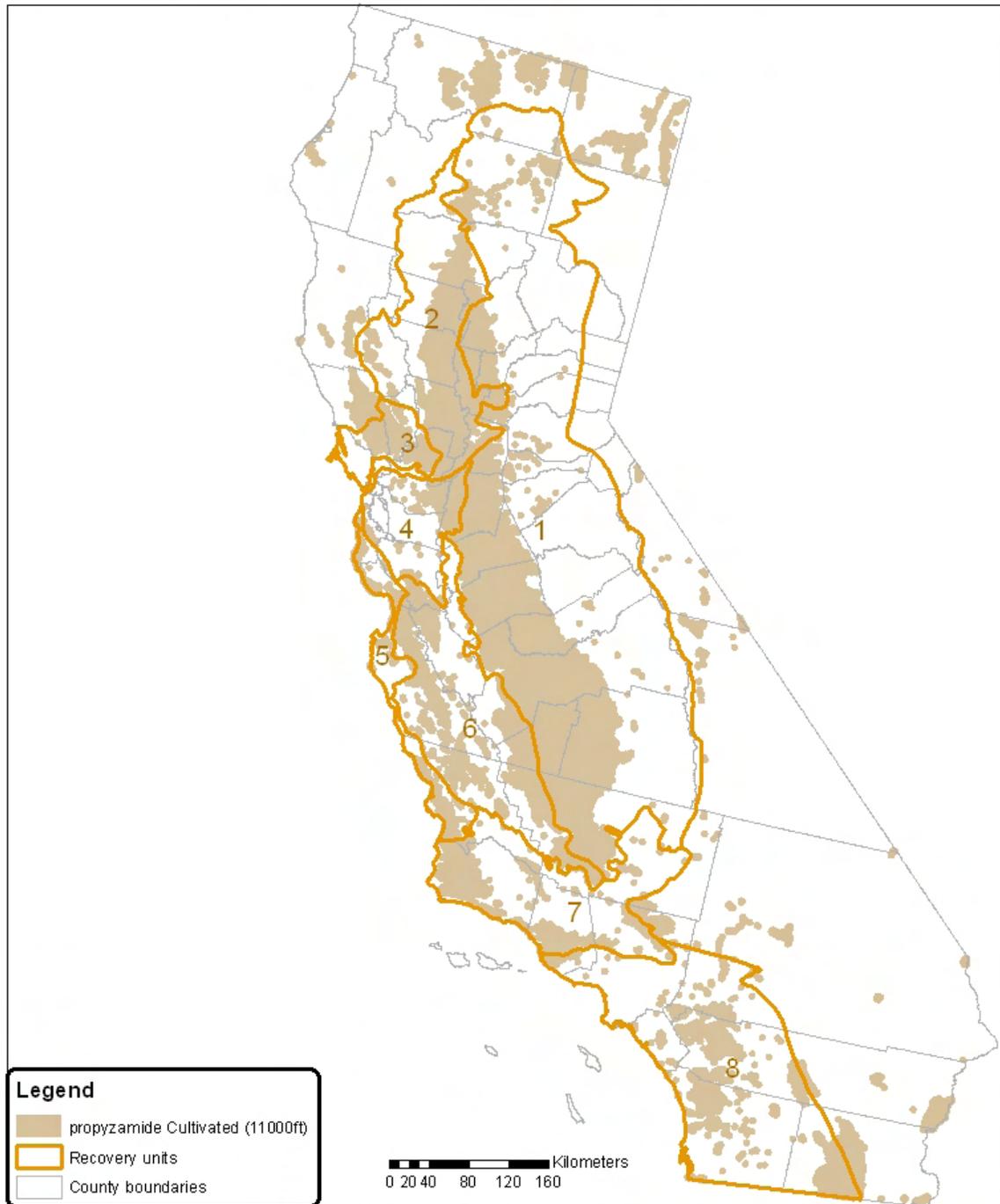
<b>Land Cover</b>	<b>Max App. Rate</b>	<b>Spray Method</b>	<b>Buffer Distance</b>
Cultivated Crops	4.08 lbs a.i./A	Aerial	11,000 ft
Orchards/vineyards	4.08 lbs a.i./A	Ground	16,200 ft
Turf	1.53 lbs a.i./A	Ground	9,620 ft
Pasture	0.510 lbs a.i./A	Aerial	4,240 ft

To understand the area indirectly affected by the federal action due to spray drift from application areas of propyzamide, land covers are considered as potential application areas. These areas are “buffered” using ArcGIS 9.2. In this process, the original land cover is modified by expanding the border of each polygon representing a field out to a designated distance, which in this case, is the distance estimated where propyzamide in spray drift does not exceed any LOCs. This effectively expands the action area relevant to terrestrial habitats so that it includes the area directly affected by the federal action, and the area indirectly affected by the federal action.

#### **D.4. Determination of final action area for propyzamide uses**

In order to define the final action areas relevant to uses of propyzamide, it is necessary to combine areas directly affected, as well as aquatic and terrestrial habitats indirectly affected by the federal action. This is done separately for each use with ArcGIS 9.2. Landcovers representing areas directly affected by propyzamide applications are overlapped with indirectly affected aquatic habitats (if determined by down stream dilution modeling) and with indirectly affected terrestrial habitats (if determined by spray drift modeling). It is assumed that lentic (standing water) aquatic habitats (*e.g.* ponds, pools, marshes) overlapping with the terrestrial areas are also indirectly affected by the federal action. The result is a final action area for propyzamide uses on agricultural lands, orchards and vineyards, pastures, and turf. The final action areas of concern for this assessment are depicted for each land cover in **Figures D.2-D.5**.

## Propyzamide Cultivated Crop Action Area



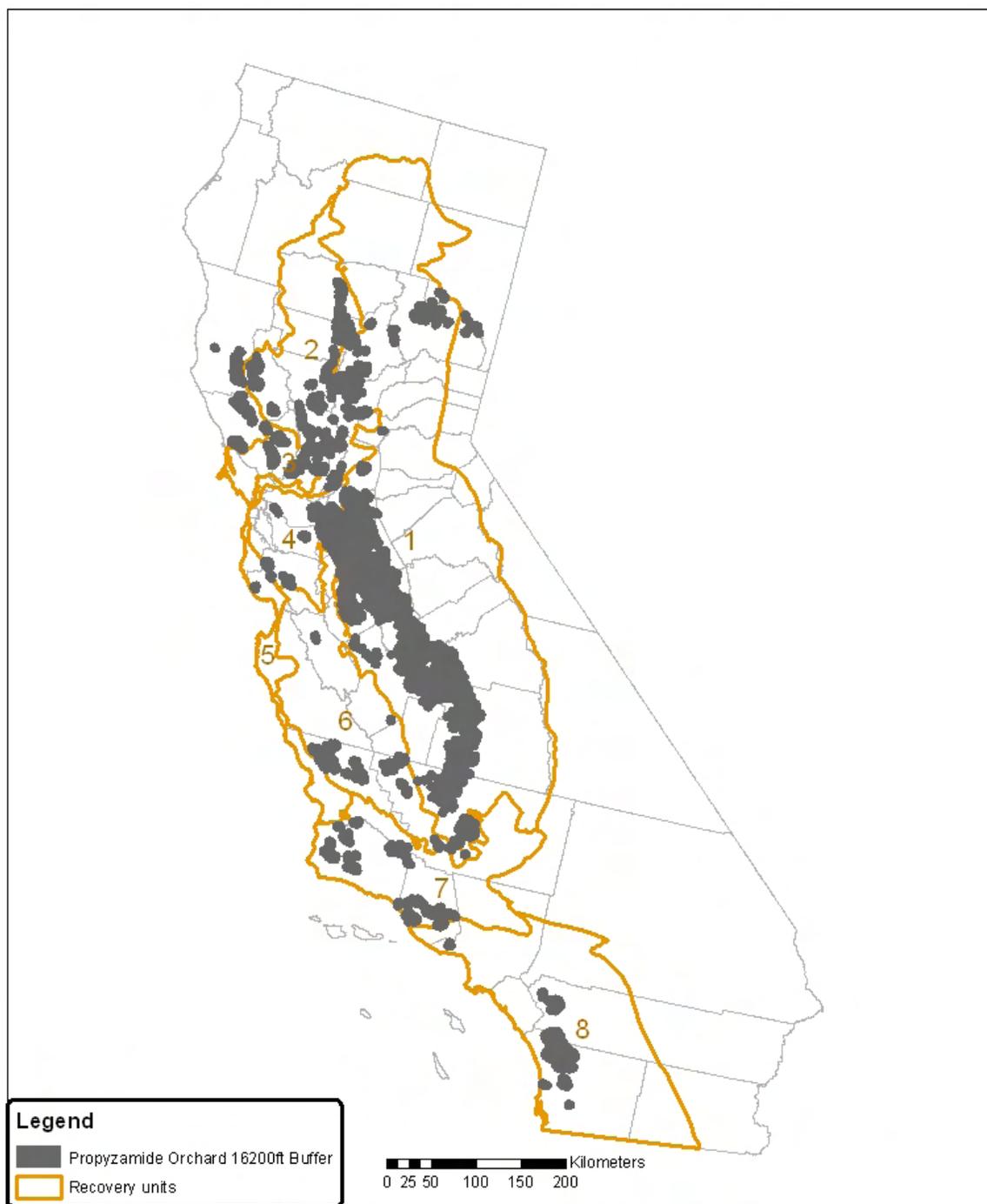
Compiled from California County boundaries (ESRI, 2002),  
USDA National Agriculture Statistical Service (NASS, 2002)  
Gap Analysis Program Orchard/Vineyard Landcover (GAP)  
National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
of Pesticides Programs, Environmental Fate and Effects Division.  
Projection: Albers Equal Area Conic USGS, North American  
Datum of 1983 (NAD 1983).

Produced 1/17/2008

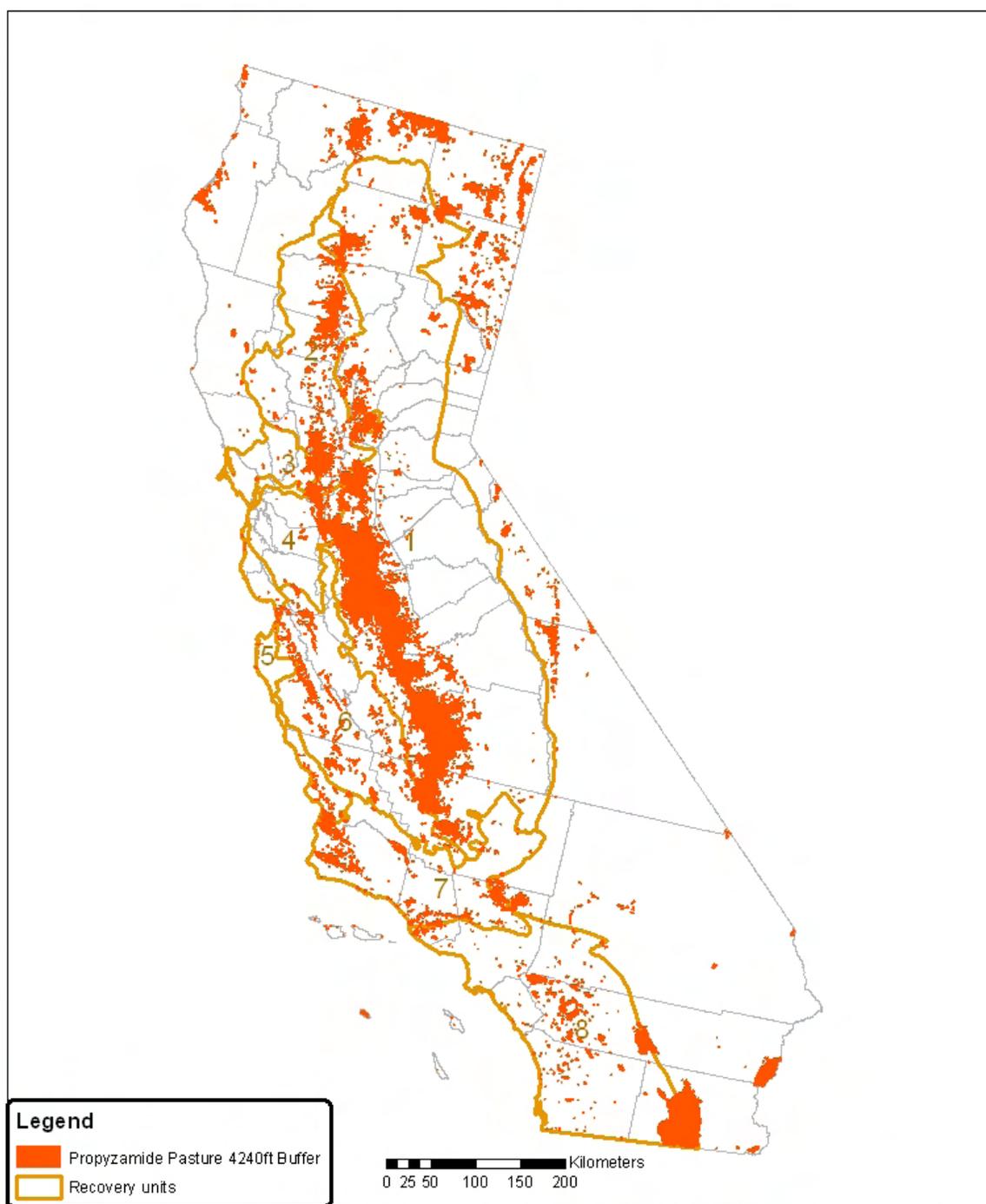
**Figure D.2. Final action area for agricultural uses of propyzamide.**

## Propyzamide Action Area for Orchard



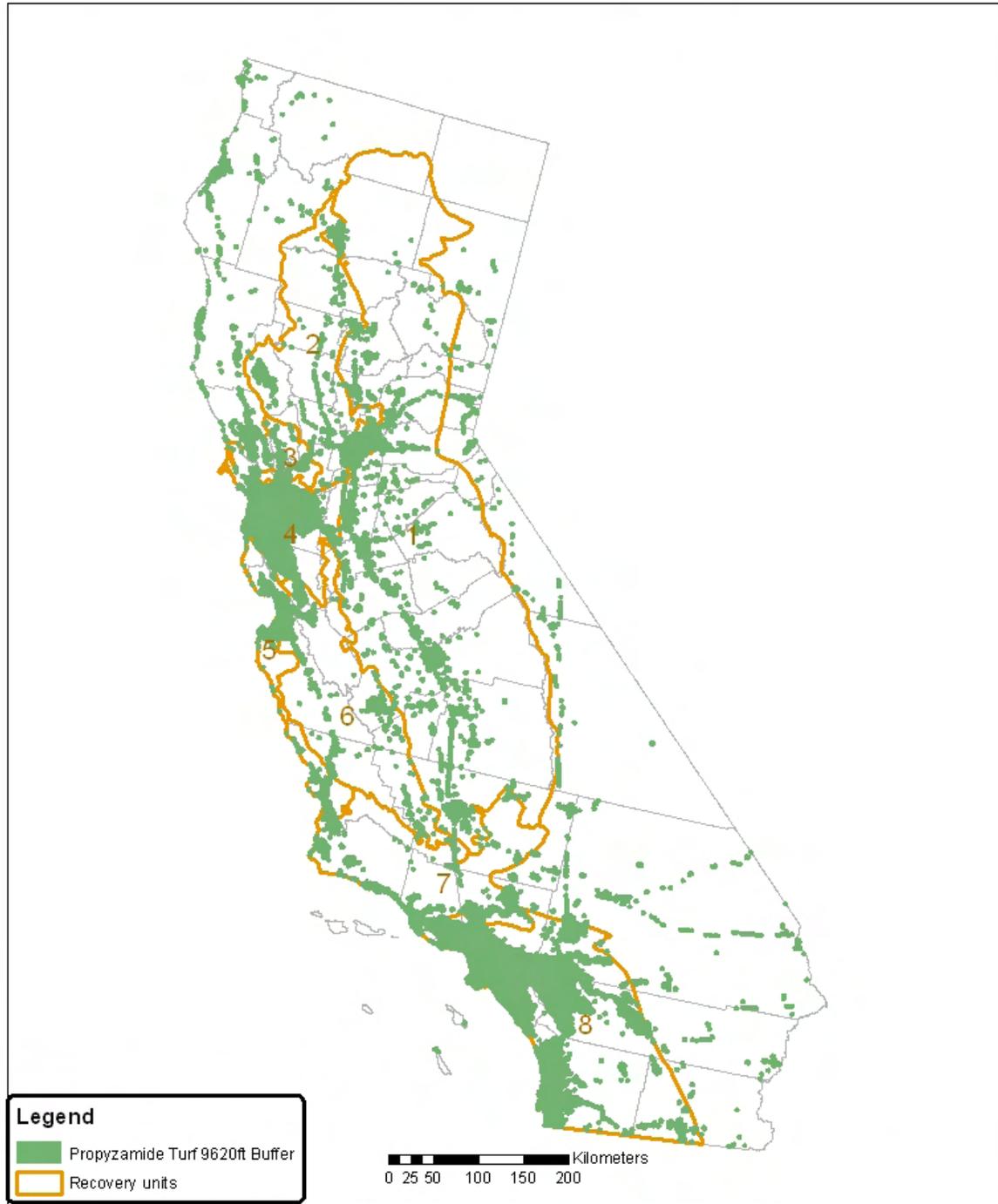
**Figure D.3. Final action area for orchard and vineyard uses of propyzamide.**

## Propyzamide Action Area for Pasture



**Figure D.4. Final action area for pasture uses of propyzamide.**

# Propyzamide Action Area for Turf



Compiled from California County boundaries (ESRI, 2002),  
USDA National Agriculture Statistical Service (NASS, 2002)  
Gap Analysis Program Orchard/Vineyard Landcover (GAP)  
National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
of Pesticides Programs, Environmental Fate and Effects Division.  
Projection: Albers Equal Area Conic USGS, North American  
Datum of 1983 (NAD 1983).

Produced 1/17/2008

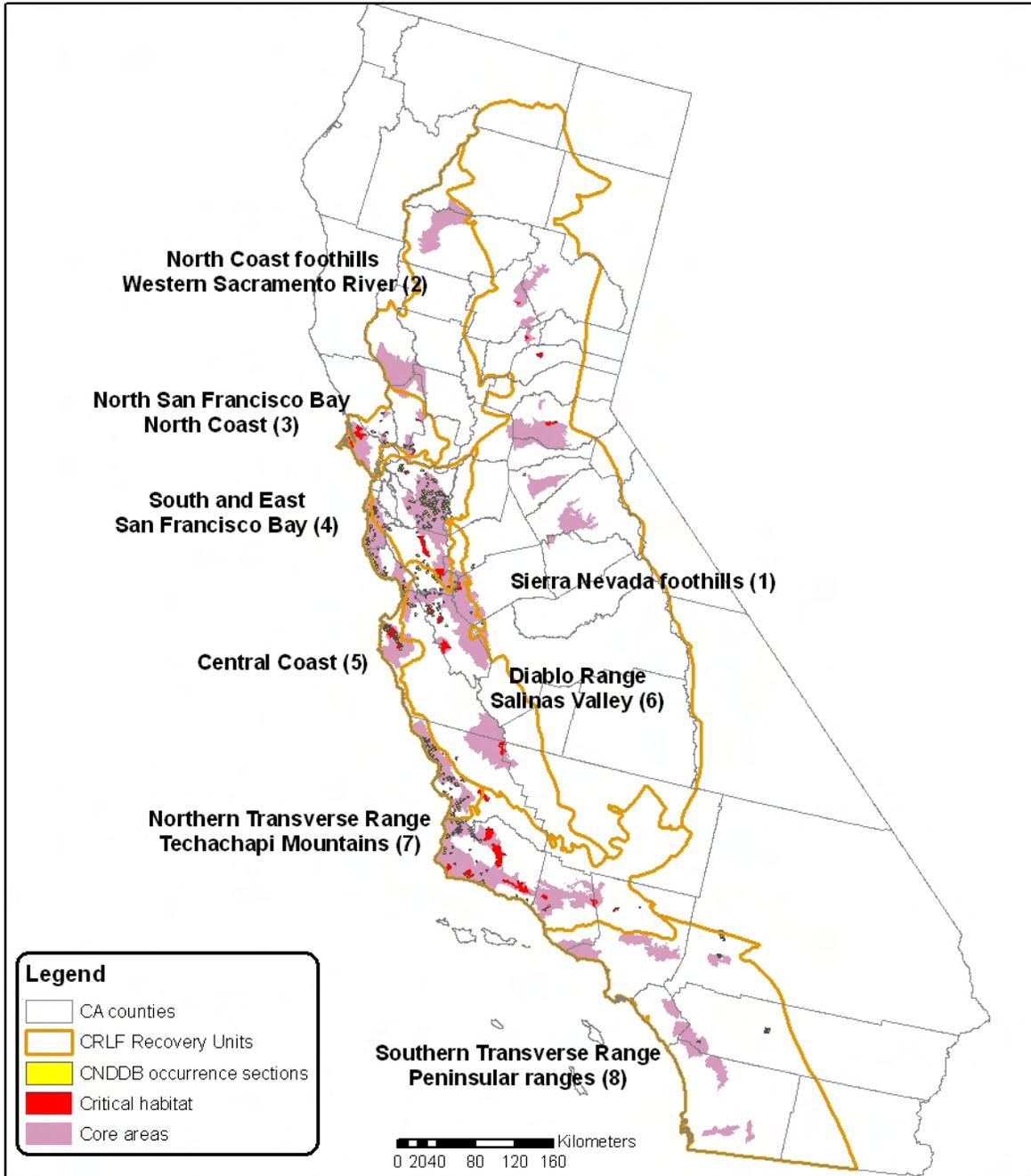
**Figure D.5. Final action area for turf uses of propyzamide.**

## **D.5. Determination of overlap between propyzamide action area and CRLF habitat**

There are three types of CRLF habitat areas considered in this assessment: Critical Habitat (CH); Core Areas; and California Natural Diversity Database (CNDDDB) occurrence sections (EPA Region 9) (**Figure D.6**). Critical habitat areas were obtained from the U.S. Fish and Wildlife Service's (USFWS) final designation of critical habitat for the CRLF (USFWS 2006). Core areas were obtained from USFWS's Recovery Plan for the CRLF (USFWS 2002). The occurrence sections represent an EPA-derived subset of occurrences noted in the CNDDDB. They are generalized by the Meridian Range and Township Section (MTRS) one square mile units so that individual habitat areas are obfuscated. As such, only occurrence section counts are provided and not the area potentially affected.

In order to confirm that uses of propyzamide have the potential to affect CRLF through direct applications to target areas and runoff and spray drift to non-target areas, it is necessary to determine whether or not the final action areas for propyzamide uses overlap with CRLF habitats. Spatial analysis using ArcGIS 9.2 indicates that terrestrial habitats (and potentially lentic aquatic habitats) of the final action areas overlap with the core areas, critical habitat and available occurrence data for CRLF. The spatial overlap of each land cover on each recovery unit is listed in **Table D.4** followed by more detailed tabulation on the county scale. The overlap of CRLF core areas, critical habitat, occurrences, and the total California action area are depicted in **Figure D.7**, with magnified layouts of the recovery units depicted in **Figures D.8-D.13**.

# CRLF Recovery Units and Habitat Areas



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. June, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

**Figure D.6. Recovery units and areas relevant to the CRLF.**

<b>Table D.4. Spray drift action area &amp; CRLF habitat overlap spatial summary results by recovery unit.</b>									
<i>Measure</i>	<i>RU1</i>	<i>RU2</i>	<i>RU3</i>	<i>RU4</i>	<i>RU5</i>	<i>RU6</i>	<i>RU7</i>	<i>RU8</i>	<i>Total</i>
Established species habitat area (CH plus core in sq km)	2894	1224	1244	3228	3712	4921	4840	1377	23440
Established occurrence sections (972 total; 30 outside recovery units)	13	3	70	328	281	122	92	33	942
<b><i>Cultivated crop use (11,000-ft buffer)</i></b>									
Overlapping habitat area (sq km)	761	65	254	953	2305	1931	2466	404	9142
<i>Percent area affected</i>	<i>26%</i>	<i>5%</i>	<i>20%</i>	<i>30%</i>	<i>62%</i>	<i>39%</i>	<i>51%</i>	<i>29%</i>	<i>39%</i>
# Occurrence sections affected	2	0	32	144	243	81	80	28	610
<b><i>Orchard/vineyard use (16,200-ft buffer)</i></b>									
Overlapping habitat area (sq km)	393	0	47	354	147	375	1241	517	3074
<i>Percent area affected</i>	<i>14%</i>	<i>0%</i>	<i>4%</i>	<i>11%</i>	<i>4%</i>	<i>8%</i>	<i>26%</i>	<i>28%</i>	<i>13%</i>
# Occurrence sections affected	2	0	17	93	27	16	27	4	186
<b><i>Pasture use (4,240-ft buffer)</i></b>									
Overlapping habitat area (sq km)	155	216	27	120	539	579	1082	100	2818
<i>Percent area affected</i>	<i>5%</i>	<i>18%</i>	<i>2%</i>	<i>4%</i>	<i>15%</i>	<i>12%</i>	<i>22%</i>	<i>7%</i>	<i>12%</i>
# Occurrence sections affected	2	0	4	45	99	38	54	14	256
<b><i>Turf use (9,620-ft buffer)</i></b>									
Overlapping habitat area (sq km)	378	108	530	1764	1400	878	1370	778	7006
<i>Percent area affected</i>	<i>13%</i>	<i>9%</i>	<i>43%</i>	<i>55%</i>	<i>38%</i>	<i>18%</i>	<i>28%</i>	<i>57%</i>	<i>30%</i>
# Occurrence sections affected	5	1	53	239	192	51	69	26	636

*Habitat Area Overlap for Propyzamide Uses (including Core and Critical Habitat areas)*

**Cultivated (3353 meter buffer)**

**Recovery Unit 1 (2894 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Amador	181.3	6.3%
El Dorado	321.8	11.1%
Fresno	59.5	2.1%
Merced	158.7	5.5%
Sacramento	14.6	0.5%
San Joaquin	2.9	0.1%
Shasta	3.1	0.1%
Tehama	19.5	0.7%
Total area for RU 1:	761	26.3%

**Recovery Unit 2 (1224 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Shasta	57.8	4.7%
Solano	0.2	0.0%
Tehama	7.0	0.6%
Yolo	0.0	0.0%
Total area for RU 2:	65	5.3%

**Recovery Unit 3 (1244 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Marin	3.1	0.3%
Napa	71.4	5.7%
Solano	41.7	3.4%
Sonoma	137.3	11.0%
Total area for RU 3:	254	20.4%

**Recovery Unit 4 (3228 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Alameda	76.7	2.4%
Contra Costa	457.0	14.2%
San Joaquin	23.9	0.7%
San Mateo	215.4	6.7%
Santa Clara	180.1	5.6%
Total area for RU 4:	953	29.5%

**Recovery Unit 5 (3712 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Monterey	388.7	10.5%
San Luis Obispo	1,036.7	27.9%
San Mateo	436.6	11.8%
Santa Barbara	0.3	0.0%
Santa Clara	1.8	0.0%
Santa Cruz	441.4	11.9%
Total area for RU 5:	2,305	62.1%

**Recovery Unit 6 (4921 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Fresno	24.8	0.5%
Kern	50.7	1.0%
Merced	102.4	2.1%
Monterey	603.8	12.3%
San Benito	550.8	11.2%
San Joaquin	16.3	0.3%
San Luis Obispo	432.9	8.8%
Santa Clara	95.1	1.9%
Santa Cruz	54.0	1.1%
Total area for RU 6:	1,931	39.2%

**Recovery Unit 7 (4840 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	4.5	0.1%
San Luis Obispo	28.6	0.6%
Santa Barbara	2,035.7	42.1%
Ventura	397.7	8.2%
Total area for RU 7:	2,466	51.0%

**Recovery Unit 8 (1376 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	38.4	2.8%
Orange	20.8	1.5%
Riverside	175.9	12.8%
San Diego	141.8	10.3%
Ventura	26.6	1.9%
Total area for RU 8:	404	29.3%

**Orchards (4938 meter buffer)**

**Recovery Unit 1 (2894 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Butte	75.8	2.6%
Fresno	39.2	1.4%
Merced	141.3	4.9%
Plumas	119.4	4.1%
San Joaquin	17.5	0.6%
Stanislaus	0.0	0.0%
Total area for RU 1:	393	13.6%

**Recovery Unit 3 (1244 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Napa	4.2	0.3%
Solano	26.7	2.1%
Sonoma	15.9	1.3%
Total area for RU 3:	47	3.8%

**Recovery Unit 4 (3228 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Alameda	228.8	7.1%
Contra Costa	120.0	3.7%
San Joaquin	5.5	0.2%
Santa Clara	0.1	0.0%
Total area for RU 4:	354	11.0%

**Recovery Unit 5 (3712 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
San Luis Obispo	13.2	0.4%
San Mateo	9.6	0.3%
Santa Clara	1.6	0.0%
Santa Cruz	122.7	3.3%
Total area for RU 5:	147	4.0%

**Recovery Unit 6 (4921 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Fresno	27.0	0.5%
Kern	21.1	0.4%
Merced	16.4	0.3%
Monterey	1.2	0.0%
San Benito	30.5	0.6%
San Joaquin	3.4	0.1%
San Luis Obispo	275.7	5.6%
Total area for RU 6:	375	7.6%

**Recovery Unit 7 (4840 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
San Luis Obispo	7.6	0.2%
Santa Barbara	782.7	16.2%
Ventura	450.3	9.3%
Total area for RU 7:	1,241	25.6%

**Recovery Unit 8 (1376 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	142.5	10.4%
Riverside	205.5	14.9%
San Diego	161.6	11.7%
Ventura	7.9	0.6%
Total area for RU 8:	517	37.6%

**Pasture (1292 meter buffer)****Recovery Unit 1 (2894 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Amador	48.8	1.7%
El Dorado	48.3	1.7%
Fresno	0.8	0.0%
Merced	34.6	1.2%
Sacramento	1.0	0.0%
Shasta	3.1	0.1%
Tehama	18.7	0.6%
Total area for RU 1:	155	5.4%

**Recovery Unit 2 (1224 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Shasta	89.0	7.3%
Tehama	126.9	10.4%
Total area for RU 2:	216	17.6%

**Recovery Unit 3 (1244 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Marin	8.8	0.7%
Napa	13.2	1.1%
Solano	4.3	0.3%
Sonoma	0.8	0.1%
Total area for RU 3:	27	2.2%

**Recovery Unit 4 (3228 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Alameda	79.8	2.5%
Contra Costa	33.4	1.0%
San Joaquin	0.0	0.0%
San Mateo	6.3	0.2%
Total area for RU 4:	120	3.7%

**Recovery Unit 5 (3712 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Monterey	66.9	1.8%
San Luis Obispo	368.8	9.9%
San Mateo	34.8	0.9%
Santa Barbara	0.2	0.0%
Santa Cruz	68.7	1.9%
Total area for RU 5:	539	14.5%

**Recovery Unit 6 (4921 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Monterey	163.8	3.3%
San Benito	227.7	4.6%
San Luis Obispo	148.0	3.0%
Santa Clara	11.9	0.2%
Santa Cruz	28.1	0.6%
Total area for RU 6:	579	11.8%

**Recovery Unit 7 (4840 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	7.2	0.1%
San Luis Obispo	19.7	0.4%
Santa Barbara	920.2	19.0%
Ventura	135.3	2.8%
Total area for RU 7:	1,082	22.4%

**Recovery Unit 8 (1376 sq km habitat)**

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	26.6	1.9%
Orange	4.0	0.3%
Riverside	30.4	2.2%
San Diego	7.0	0.5%
Ventura	32.5	2.4%
Total area for RU 8:	100	7.3%

## Turf (2932 meter buffer)

### Recovery Unit 1 (2894 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Amador	47.1	1.6%
El Dorado	262.2	9.1%
Merced	32.1	1.1%
Sacramento	30.8	1.1%
Shasta	1.5	0.1%
Tehama	3.7	0.1%
Yuba	0.9	0.0%
Total area for RU 1:	378	13.1%

### Recovery Unit 2 (1224 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Marin	10.3	0.8%
Shasta	30.3	2.5%
Solano	40.2	3.3%
Sonoma	0.1	0.0%
Tehama	27.4	2.2%
Total area for RU 2:	108	8.9%

### Recovery Unit 3 (1244 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Marin	272.9	21.9%
Napa	82.2	6.6%
Solano	105.3	8.5%
Sonoma	69.8	5.6%
Total area for RU 3:	530	42.6%

### Recovery Unit 4 (3228 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Alameda	757.6	23.5%
Contra Costa	665.6	20.6%
San Joaquin	1.9	0.1%
San Mateo	292.2	9.1%
Santa Clara	46.4	1.4%
Total area for RU 4:	1,764	54.6%

### Recovery Unit 5 (3712 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Monterey	254.2	6.8%
San Luis Obispo	593.0	16.0%
San Mateo	219.2	5.9%
Santa Barbara	0.0	0.0%
Santa Clara	2.3	0.1%
Santa Cruz	331.5	8.9%
Total area for RU 5:	1,400	37.7%

### Recovery Unit 6 (4921 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Merced	44.5	0.9%
Monterey	325.6	6.6%
San Benito	276.7	5.6%
San Luis Obispo	150.4	3.1%
Santa Clara	26.7	0.5%
Santa Cruz	54.0	1.1%

Total area for RU 6: 878 17.8%

### Recovery Unit 7 (4840 sq km habitat)

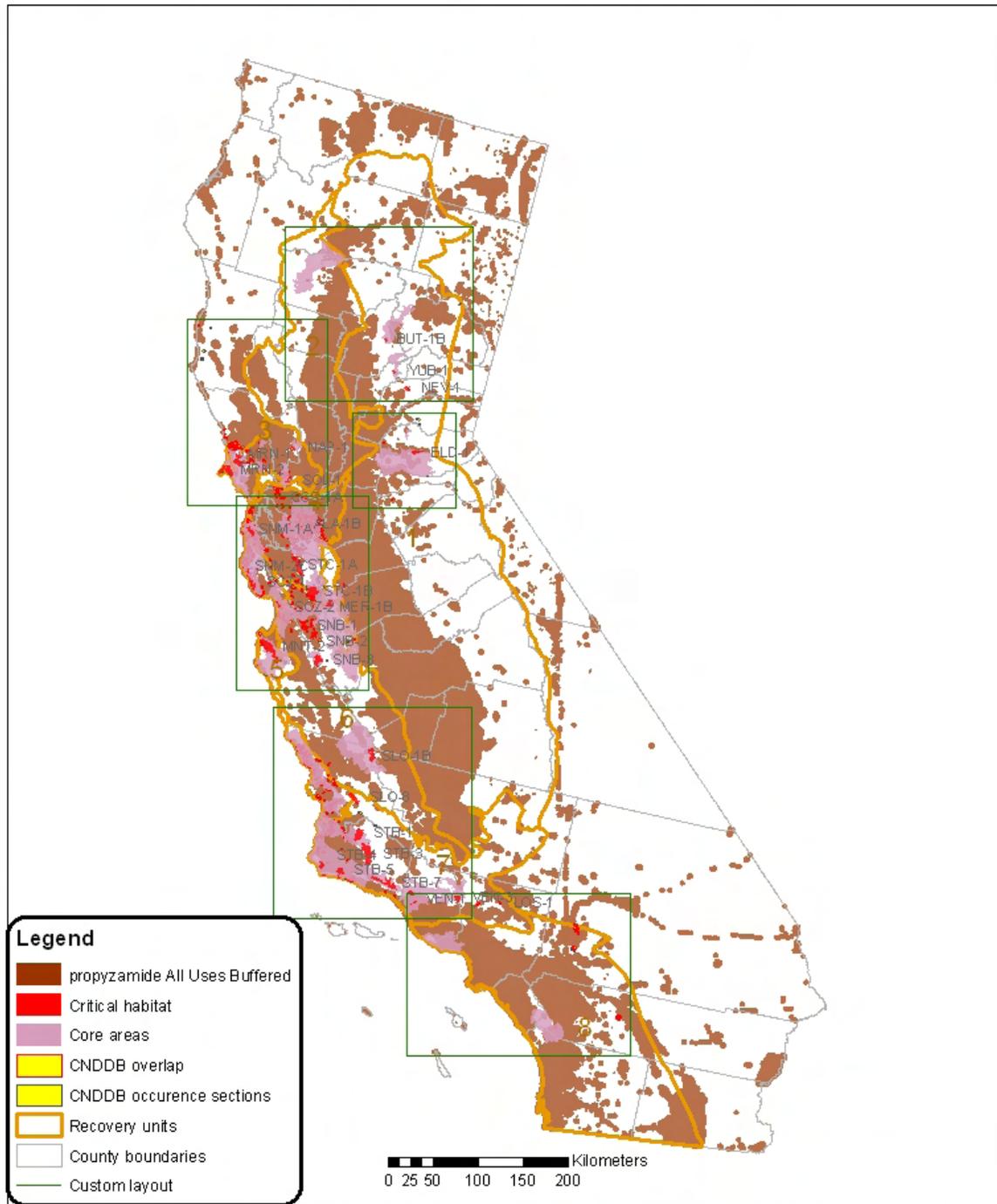
	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	43.2	0.9%
San Luis Obispo	18.7	0.4%
Santa Barbara	1,102.6	22.8%
Ventura	205.5	4.2%
Total area for RU 7:	1,370	28.3%

### Recovery Unit 8 (1376 sq km habitat)

	<u>Use Area Overlap</u>	<u>Area/RU hab. %</u>
Los Angeles	394.7	28.7%
Orange	67.1	4.9%
Riverside	132.8	9.6%
San Diego	38.8	2.8%
Ventura	145.1	10.5%

Total area for RU 8: 778 56.6%

## Propyzamide Action Area for All Uses



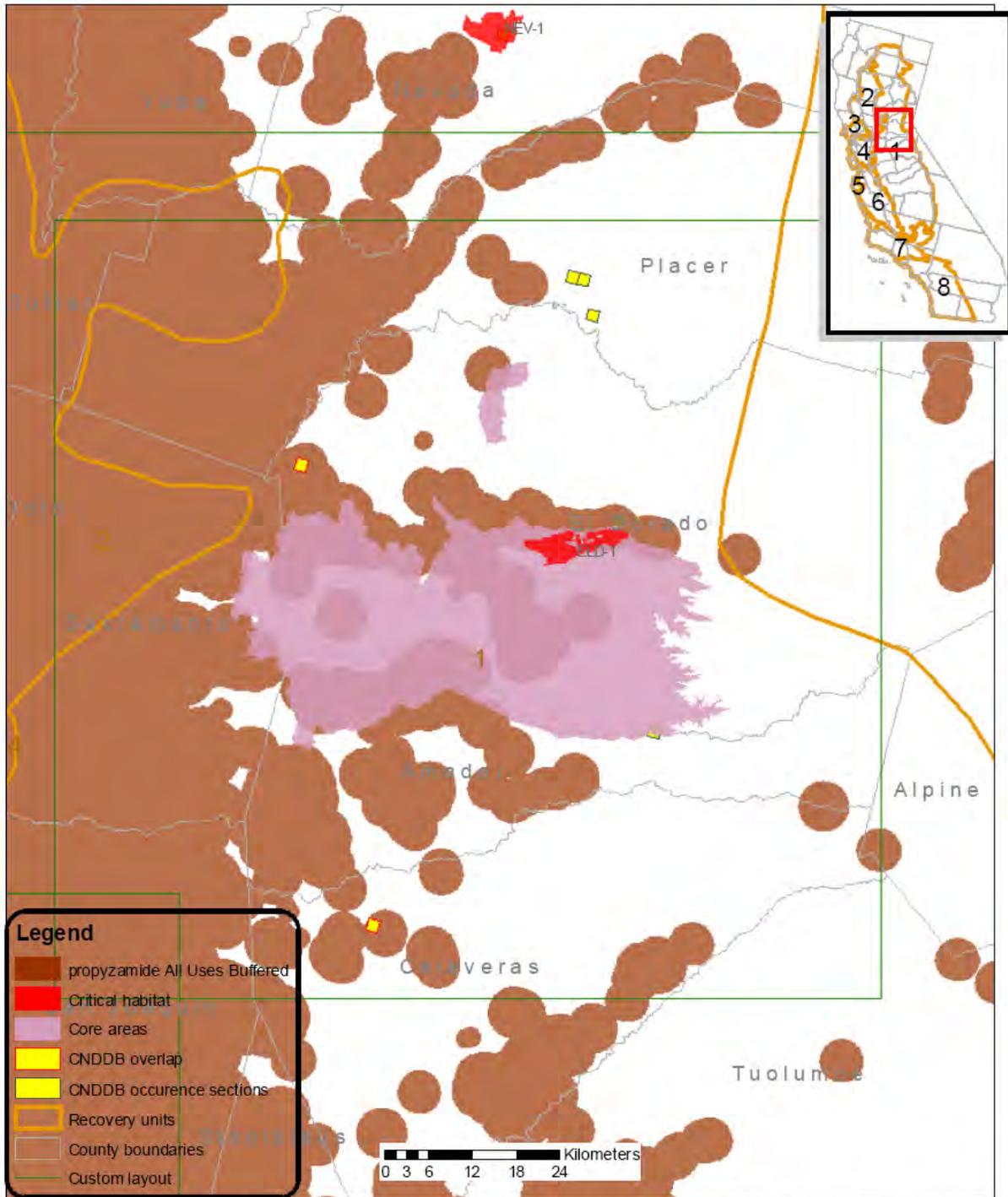
Compiled from California County boundaries (ESRI, 2002),  
 USDA National Agriculture Statistical Service (NASS, 2002)  
 Gap Analysis Program Orchard/Vineyard Landcover (GAP)  
 National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
 of Pesticides Programs, Environmental Fate and Effects Division.  
 Projection: Albers Equal Area Conic USGS, North American  
 Datum of 1983 (NAD 1983).

Produced 1/17/2008

**Figure D.7. Map of overlap between action area for propyzamide and CRLF core areas and critical habitat.**

# Propyzamide Action Area for All Uses - RU 1



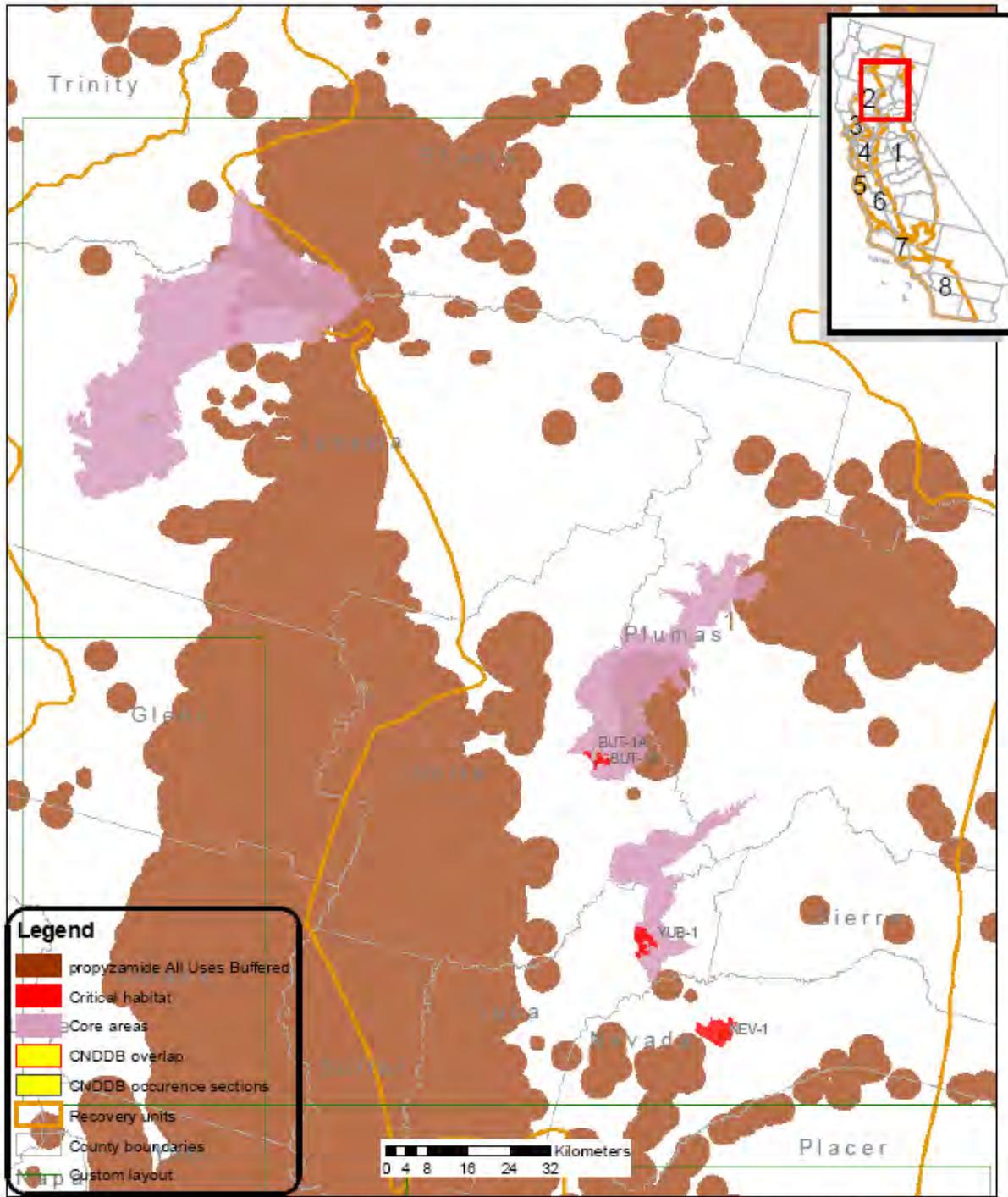
Compiled from California County boundaries (ESRI, 2002),  
 USDA National Agriculture Statistical Service (NASS, 2002)  
 Gap Analysis Program Orchard/ Vineyard Landcover (GAP)  
 National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
 of Pesticides Programs, Environmental Fate and Effects Division.  
 Projection: Albers Equal Area Conic USGS, North American  
 Datum of 1983 (NAD 1983).

Produced 1/17/2008

**Figure D.8. Detailed map of overlap between action area for propyzamide and CRLF core areas and critical habitat: enlarged view of recovery unit 1.**

## Propyzamide Action Area for All Uses - RU 1,2



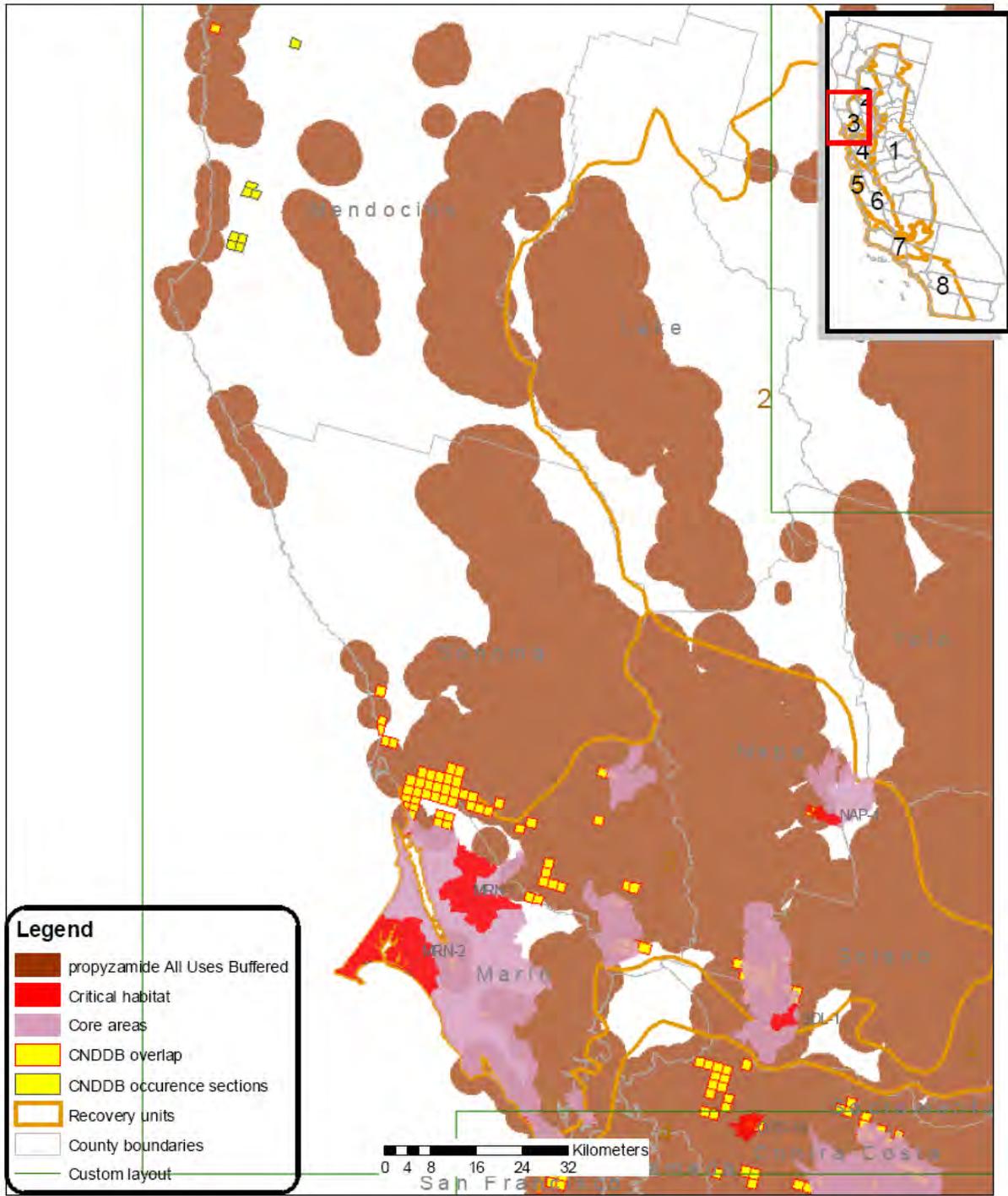
Compiled from California County boundaries (ESRI, 2002),  
 USDA National Agriculture Statistical Service (NASS, 2002)  
 Gap Analysis Program Orchard/ Vineyard Landcover (GAP)  
 National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
 of Pesticides Programs, Environmental Fate and Effects Division.  
 Projection: Albers Equal Area Conic USGS, North American  
 Datum of 1983 (NAD 1983).

Produced 1/17/2008

**Figure D.9. Detailed map of overlap between action area for propyzamide and CRLF core areas and critical habitat: enlarged view of recovery units 1 and 2.**

## Propyzamide Action Area for All Uses - RU 2, 3



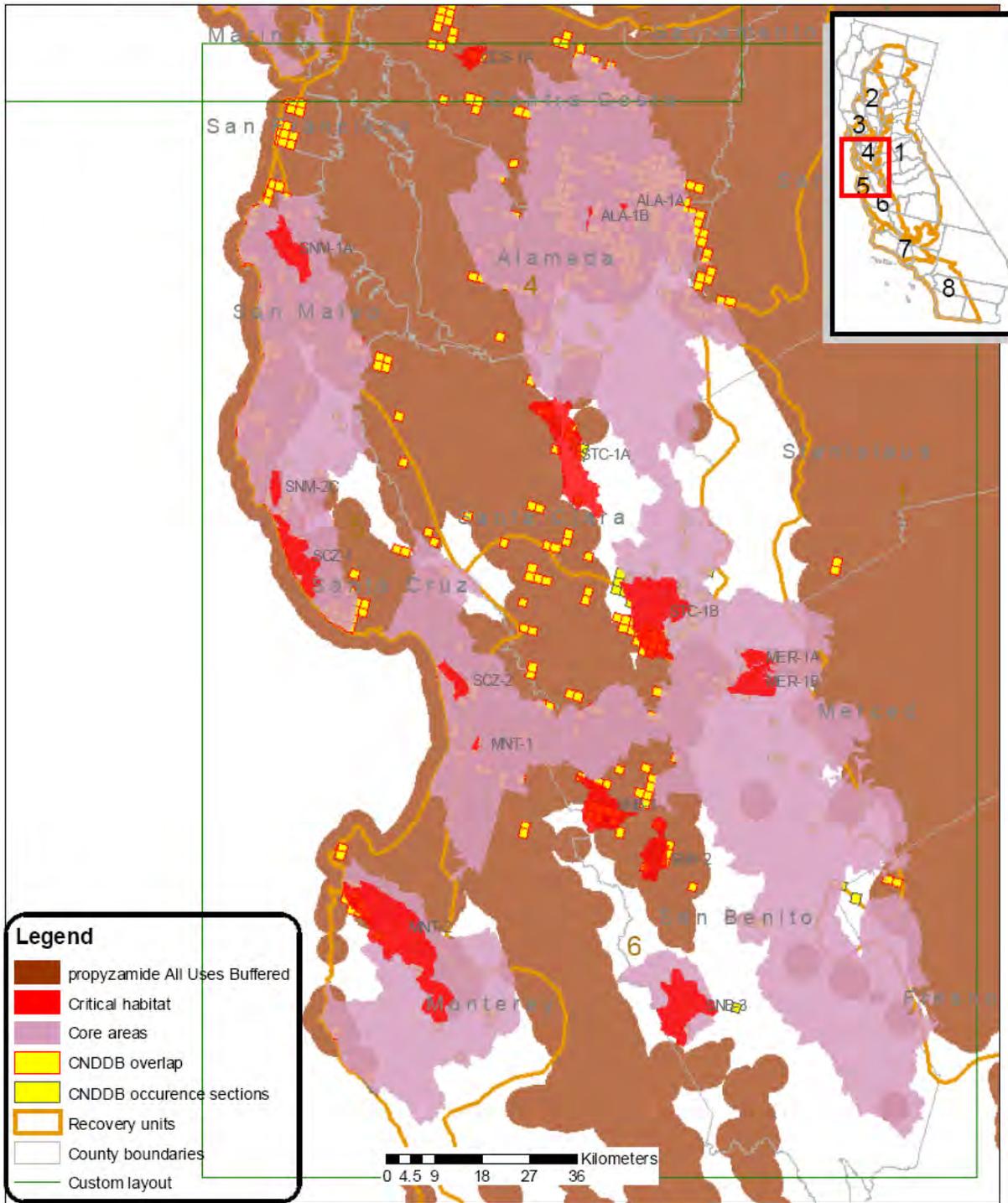
Compiled from California County boundaries (ESRI, 2002),  
 USDA National Agriculture Statistical Service (NASS, 2002)  
 Gap Analysis Program Orchard/ Vineyard Landcover (GAP)  
 National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office  
 of Pesticides Programs, Environmental Fate and Effects Division.  
 Projection: Albers Equal Area Conic USGS, North American  
 Datum of 1983 (NAD 1983).

Produced 1/17/2008

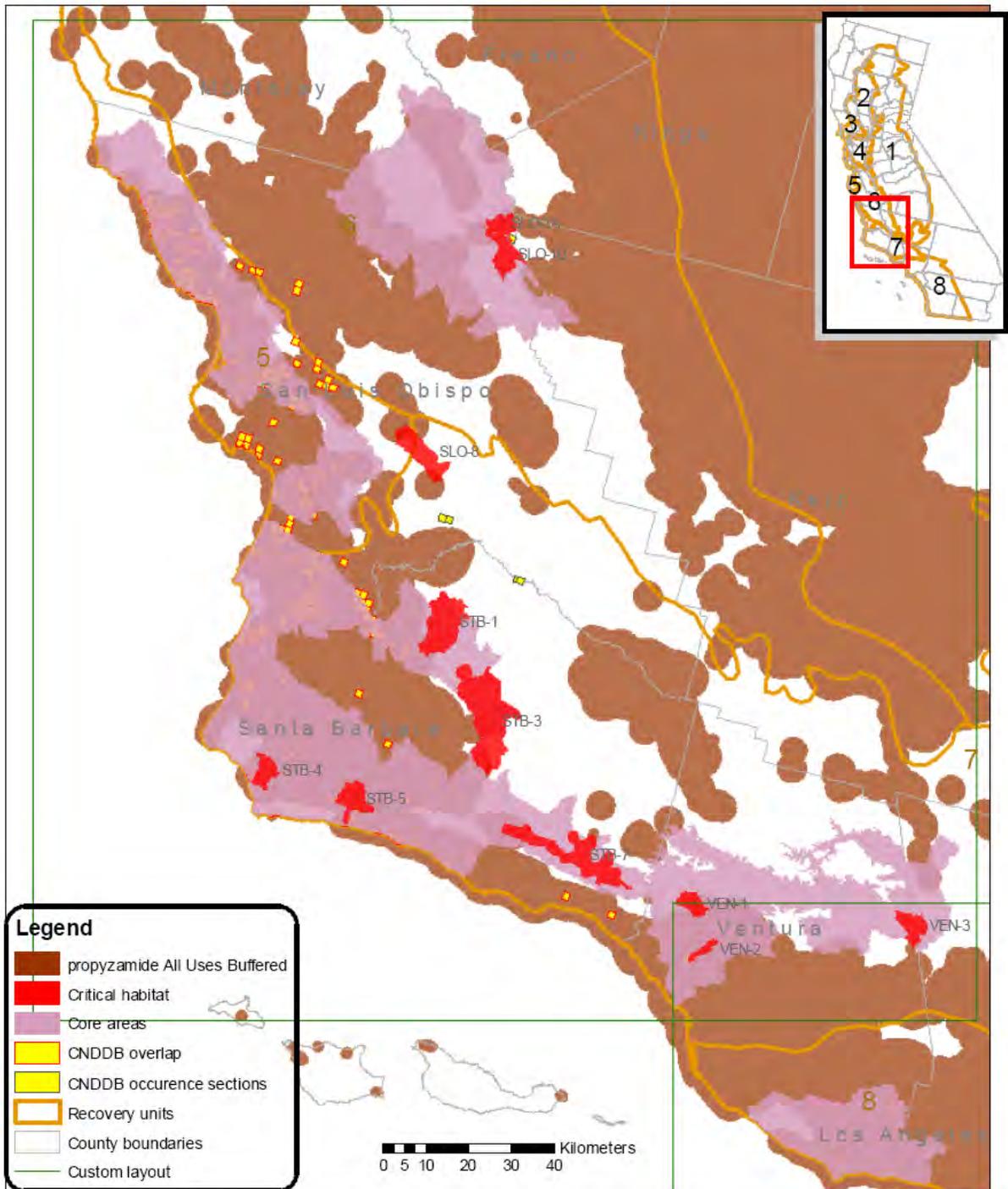
**Figure D.10. Detailed map of overlap between action area for propyzamide and CRLF core areas and critical habitat: enlarged view of recovery units 2 and 3.**

## Propyzamide Action Area for All Uses - RU 4, 5, 6



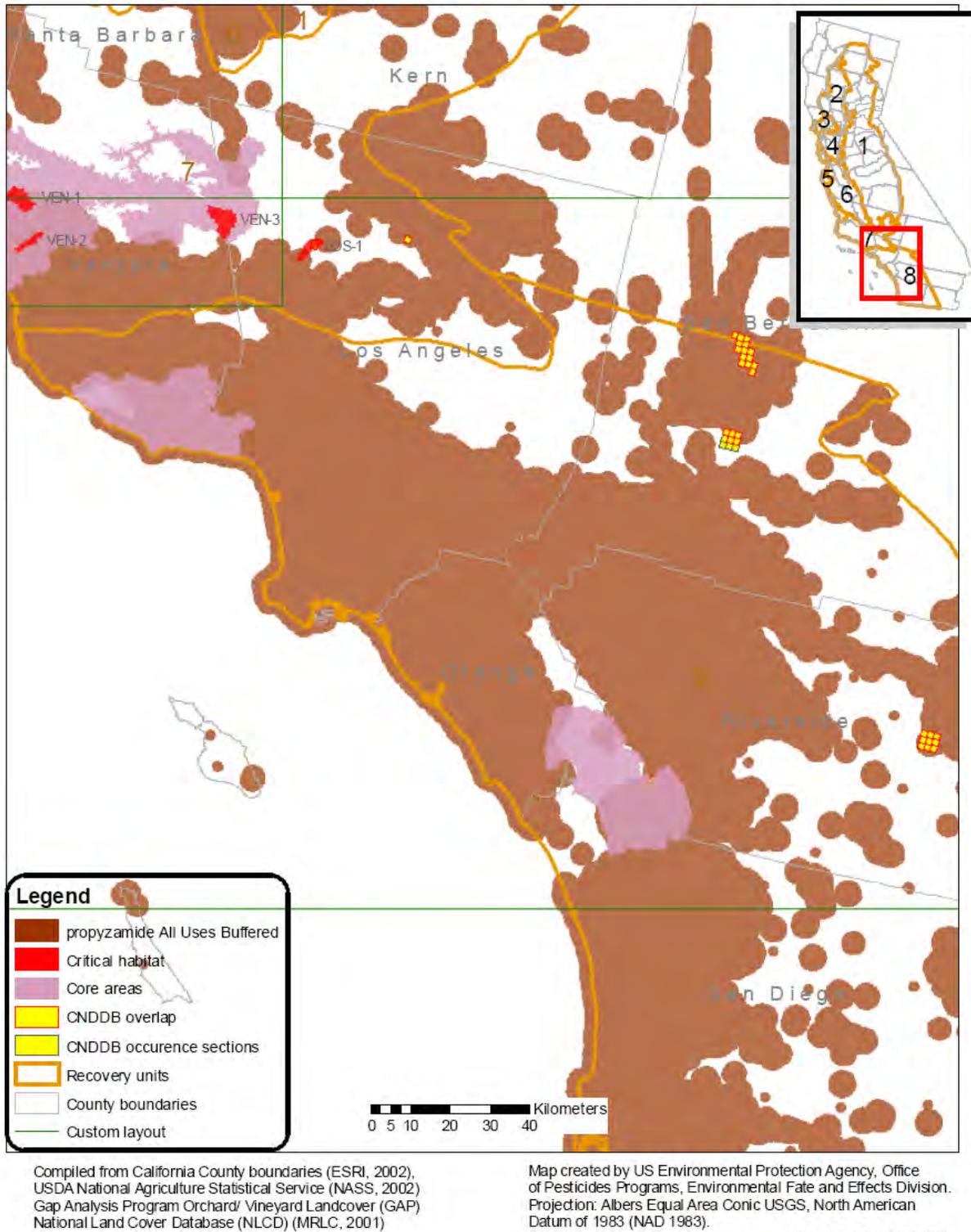
**Figure D.11. Detailed map of overlap between action area for propyzamide and CRLF core areas and critical habitat: enlarged view of recovery units 4-6.**

## Propyzamide Action Area for All Uses - RU 5, 6, 7



**Figure D.12. Detailed map of overlap between action area for propyzamide and CRLF core areas and critical habitat: enlarged view of recovery units 5-7.**

## Propyzamide Action Area for All Uses - RU 7, 8



**Figure D.13. Detailed map of overlap between action area for propyzamide and CRLF core areas and critical habitat: enlarged view of recovery units 7 and 8.**

## **D.6. Limitations and Constraints of Tabular and Geospatial Sources**

The geographic data sets used in this analysis are limited with respect to their accuracy and timeliness. The NASS Census of Agriculture (NASS 2002) contains adjusted survey data collected prior to 2002. Small use sites and minor uses (*e.g.*, specialty crops) tend to be underrepresented in this dataset. The National Land Cover Dataset (NLCD 2001) represents the best comprehensive collection of national land use and land cover information for the United States representing a range of years from 1994 – 1998. Because the NLCD does not explicitly include a class to represent orchard and vineyard landcover, California Gap Analysis Project data (CaGAP 1998) were overlaid with the NLCD and used to identify these areas.

Hydrographic data are from the NHDPlus dataset (<http://www.horizon-systems.com/nhdplus/>). NHDPlus contains the most current and accurate nationwide representation of hydrologic data. In some isolated instances, there are, however, errors in the data including missing or disconnected stream segments and incorrect assignment of flow direction. Spatial data describing the recovery zones and core areas are from the US Fish and Wildlife Service. The data depicting survey sections in which the species has been found in past surveys is from the California Natural Diversity Database (<http://www.dfg.ca.gov/bdb/html/cnddb.html>).

The relatively coarse spatial scale of these datasets precludes use of the data for highly localized studies; therefore, tabular information presented here is limited to the scale of individual Recovery Units. Additionally, some labeled uses are not possible to map precisely due to the lack of appropriate spatial data in NLCD on the location of these areas. To account for these uncertainties, the spatial analysis presented here is conservative, and may overestimate the aerial extent of actual pesticide use in California.

## **D.7. References for GIS Maps**

### Crop Maps

ESRI, 2002. Detailed Counties, ESRI data and maps. (1:24,000) [www.esri.com](http://www.esri.com)

GAP. Gap Analysis. National Biological Information Infrastructure. [www.nbio.gov](http://www.nbio.gov)

NASS, 2002. USDA National Agricultural Statistics Service. [www.nass.usda.gov](http://www.nass.usda.gov)

MRLC, 2001. Multiresolution Land Characteristics (MRLC) [www.mrlc.gov](http://www.mrlc.gov)

### Habitat Maps

US FWS 2002 California red-legged frog General Recovery Zones

US FWS 2002 California red-legged frog Core Areas

US FWS 2005 Final Critical Habitat for California red-legged frog

CNDDDB Occurrence Sections – California Natural Diversity Database  
<http://www.dfg.ca.gov/bdb/html/cnddb.html>

ESRI, 2002. Detailed Counties, ESRI data and maps. (1:24,000) [www.esri.com](http://www.esri.com)